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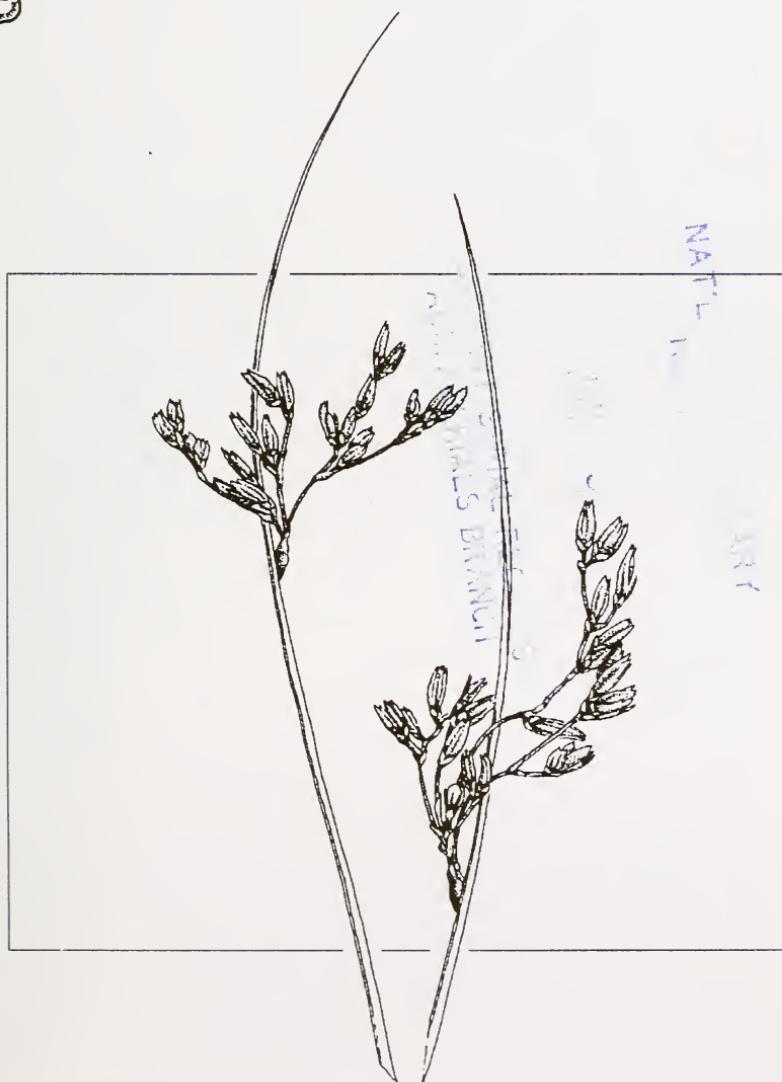
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Field Guide to Intermountain Rushes

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Front cover art: *Juncus balticus*, drawn by Lenora Oosterhuis, an emigrant from Holland, a forest ecologist, and a freelance biological artist living in Boise, ID.

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INTRODUCTION

Application of new information from the rapidly evolving fields of riparian ecology, classification, management, and restoration requires accurate identification of the biological components of these rich and varied ecosystems. In riparian areas, vegetation characteristically includes several taxonomically difficult groups, among them the sedges, rushes, willows, and grasses. This guide provides individuals working in Intermountain riparian areas with a tool to aid in identifying members of one of these groups, the rushes (*Juncus* spp.).

The geographic area considered in preparing this guide includes southeastern Oregon, Nevada, Utah, western Wyoming, and Idaho south of the Salmon River. The 23 rushes described include the common and several less abundant species. The guide is not inclusive; readers are advised to consult comprehensive local floras to verify identifications.

This guide begins with morphological illustrations. Then, after a general description of the genus, species are presented alphabetically by scientific name. Their technical descriptions include characteristics of the growth habit, leaves, involucral bracts,

inflorescences, flowers, capsules, seeds, distribution and habitat, and similar species. Line drawings and black and white or color photographs illustrate the species' growth habit, inflorescences, fruits, and seeds. After the descriptions is a glossary of terms used in this guide. The concluding section is an index of common names.

Line drawings in this publication were reproduced from Hitchcock and others (1969), with permission from the University of Washington Press. Photographs were made by the senior author. Species descriptions were developed from Davis (1952), Cronquist and others (1977), Goodrich and Neese (1986), Hermann (1975), Hitchcock and Cronquist (1973), Hitchcock and others (1969), Welsh and others (1987), and examination of specimens in the Intermountain Research Station Herbarium, Boise, ID.

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MORPHOLOGY

Descriptions in this guide may
perhaps be more easily under-
stood if the reader refers to fig-
ures 1 through 3—illustrations
of morphological characteristics.

A glossary at the end of the
publication contains further defi-
nitions of these characteristics
and of other terms used in the
descriptions.

DESCRIPTIONS

General Description: *Juncus* L.

Plants perennial, or infre-
quently annual, glabrous, grass-
like; stems caespitose or arising
few together from rhizomes, terete
to flattened, not jointed, leafless
to leafy; leaves basal or alternate,
sometimes 2-ranked; leaf sheaths
open at the base, commonly with
hyaline or scarious margins, these
often prolonged upward on the
sides at the juncture with the
blade to form rounded to acumi-
nate auricles; auricles rarely ex-
tending outward like those of
grass leaves, but sometimes
confluent, forming a ligule; leaf
blades lacking or reduced to a
bristle or well developed and lin-
ear, flat, equitant, or terete and
often hollow or filled with pith
and septate-nodulose; inflores-
cence terminal, essentially cy-
mose, from diffuse and paniclelike
or corymblike to greatly congested,
sometimes of 1 to many cymose
heads or clusters; the involucral
bract reduced to greatly elongate
and flat to terete (when terete the
inflorescence may appear lateral
on the stem); branches, heads,
and pedicels often subtended by
bractlets; flowers few (rarely 1) to
many, small, perfect, greenish to
purplish-brown or black, sessile or
pedicellate, sometimes subtended
by 2 entire hyaline-scarious
prophylls borne at the pedicel
apex and directly beneath the

perianth; perianth regular, more or less scarious, chartaceous, or partly herbaceous or hyaline, often persistent during fruiting; perianth segments 6 in 2 series of 3, equal or the inner series often the shorter; stamens (1, 2) 3 or 6, when 3 mostly opposite the outer perianth series; filaments from shorter to much longer than the anthers; ovary superior; style 1, short and inconspicuous to evident; stigma branches 3, more or less elongate; fruit a small, loculicidal, often triquetrous capsule, unilocular with 3 parietal placentae or trilocular from the intrusion of the placentae; seeds numerous, minute,

commonly ellipsoid to fusiform and apiculate, faintly reticulate or areolate, sometimes with one or both ends prolonged into a slender tail that may be longer than the body and of softer texture; $n = 3-36$. A genus of more than 200 species, widely distributed, best developed in moist to wet places of temperate and boreal regions.

The above description was derived from Cronquist and others (1977), Hitchcock and Cronquist (1973), Hitchcock and others (1969), Goodrich and Neese (1986), Hermann (1975), Welsh and others (1987).

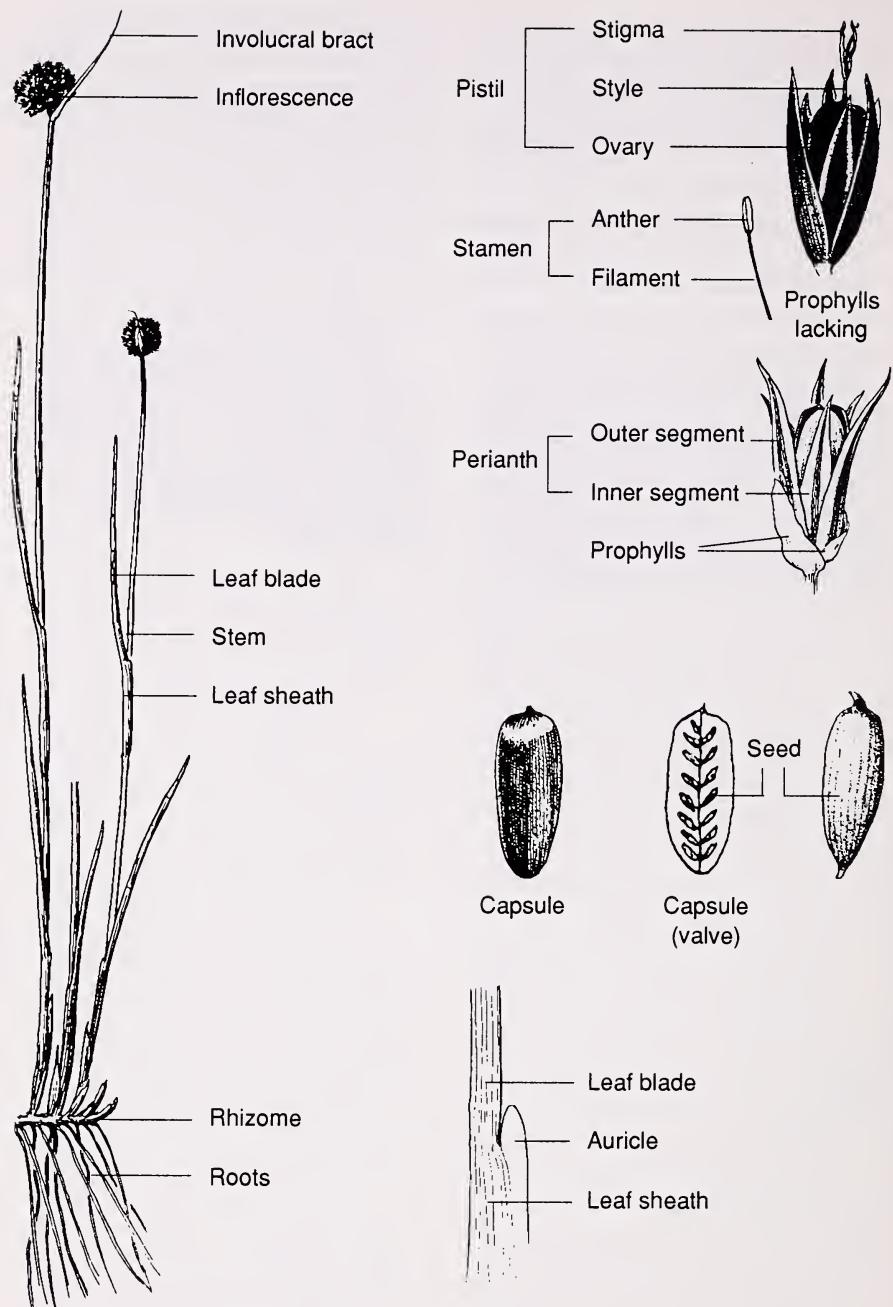


Figure 1—Rush morphology.



A. Capsule oblong-ovoid, apex blunt, slightly triquetrous. Perianth segments broadly lanceolate, margins membranous, apices subulate. Prophylls present.



D. Capsule trigonous-cylindric, apex obtuse mucronate. Perianth segments oblong-lanceolate, apices acute.



B. Capsule cylindric-ellipsoid, apex obtuse (rounded). Perianth segments: inner-shorter, obtuse; outer-longer, acute.



E. Capsule oblong-ovoid, apex obtuse-retuse. Perianth segments broadly lanceolate, apices obtuse to acute.



C. Capsule cylindric-triquetrous, apex acute. Perianth segments narrowly lanceolate, apices acuminate.



F. Capsule prismatic-conic, apex tapered. Perianth segments narrowly lanceolate, apices acuminate.



G. Broadly oblong, apex obtuse.



H. Narrowly oblong, apex truncate.



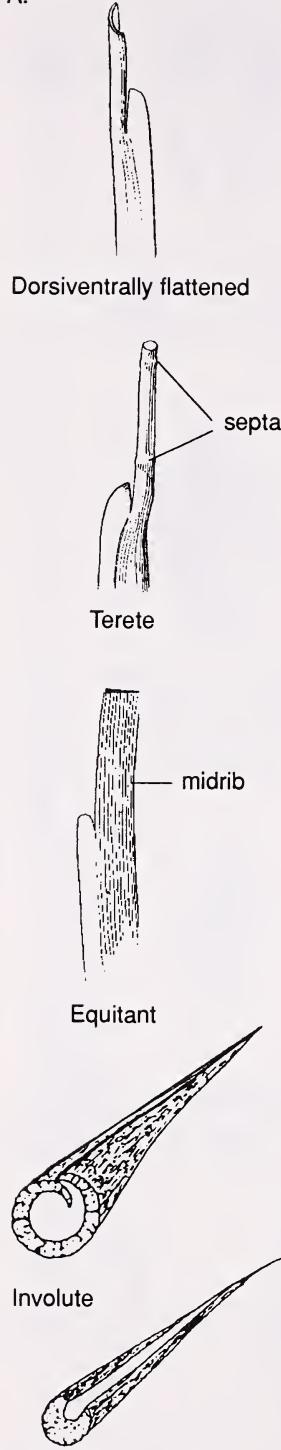
I. Narrowly ovoid, apex acute.



J. Obovoid, apex rounded-retuse.

Figure 2—Morphological characteristics of rush capsules and perianths (A-F) and rush capsules (G-J).

A.



B.

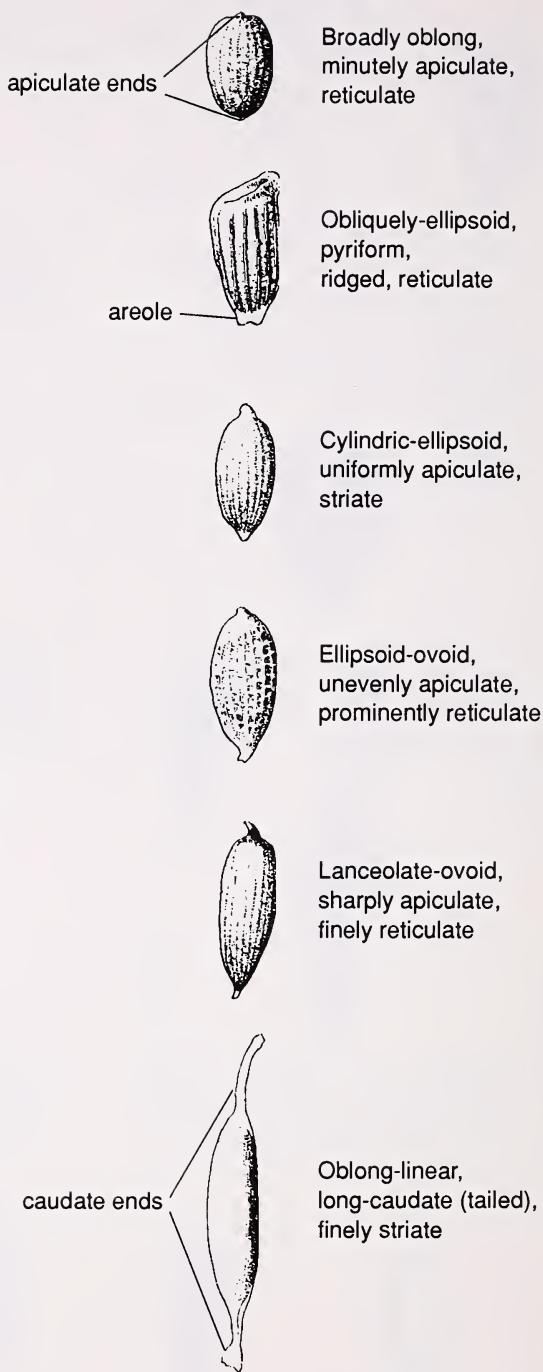


Figure 3—Morphological characteristics of rush leaf blades (A) and seeds (B).

Species Descriptions



Juncus alpinus. (A) Inflorescence, (B) capsule and perianth, (C) seeds.

Juncus alpinus Vill.

Northern rush

HABIT: Loosely tufted perennial developing from creeping rhizomes, sometimes rooting at the nodes; stems 4-50 cm tall, surpassing the leaves.

LEAVES: 1-3, mostly borne on the lower half of the stem; sheath margins scarious and prolonged into auricles; blades terete, completely septate.

INVOLUCRAL BRACT: Usually shorter than the inflorescence, 1-7 (10) cm long, sometimes leaflike.

INFLORESCENCE: Open, 2-15 cm long; branches ascending to erect; heads 5-30, each 3-6 (10) flowered.

FLOWERS: Sessile or equally short pedicelled, prophylls lacking.

Perianth segments: Light to deep purplish-brown, 2-2.5 mm long;

the inner segments shorter and rounded; the outer oblong, acute or mucronate. **Stamens:** 6; one-half to two-thirds as long as the perianth; anthers shorter than the filaments.

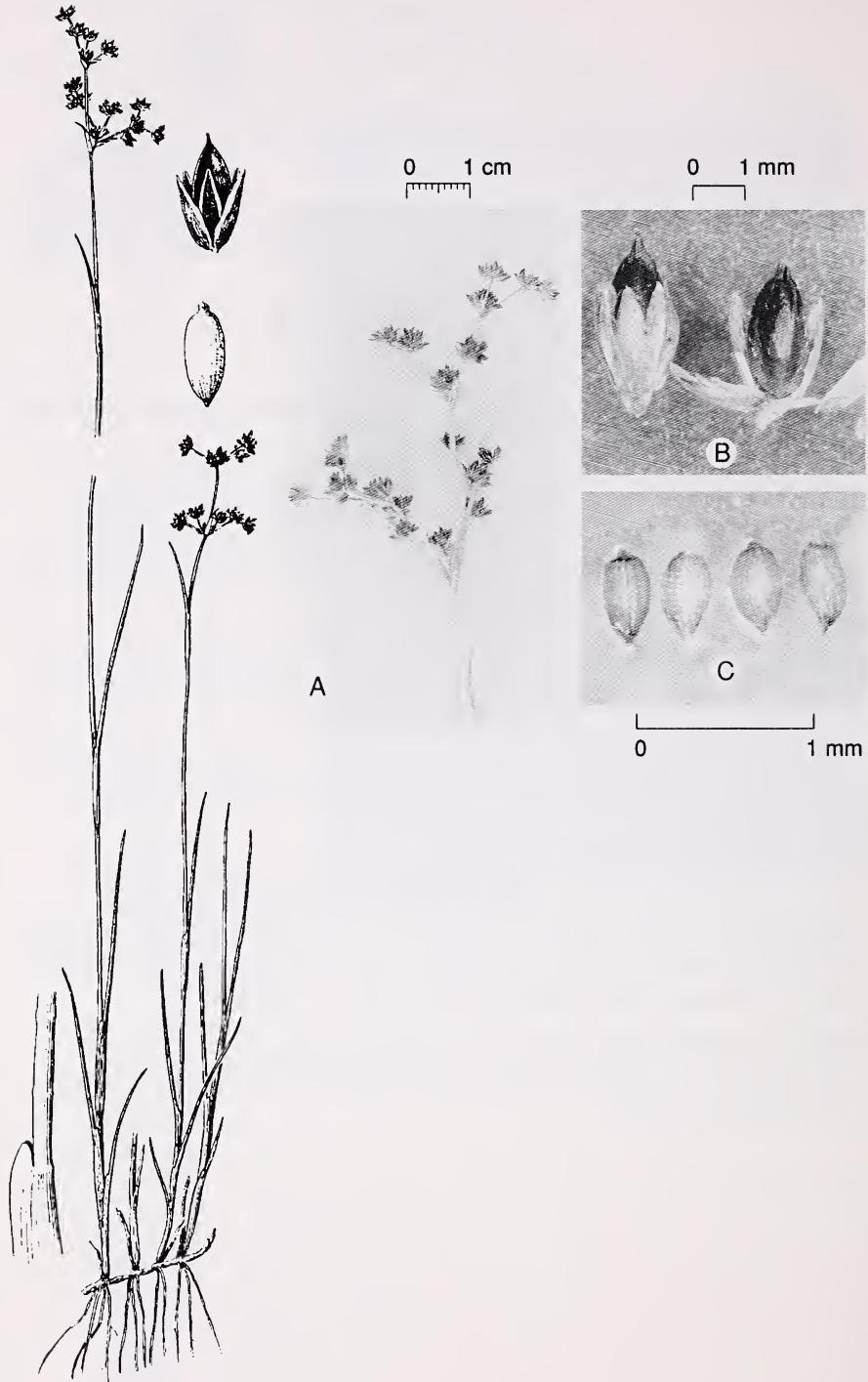
CAPSULES: Ovoid-oblong, distinctly rounded at the tip, incompletely trilocular, pale to deep brown, 2.5-3 mm long, equaling or surpassing the perianth.

SEEDS: Cylindric- to ovoid-ellipsoid, minutely apiculate at both ends, lightly striate longitudinally, medium brown to dark brown with a sheen, 0.5 mm long.

HABITAT AND DISTRIBUTION: Seeps, bogs, margins of ponds, lakes, and streams; often on limestone or other basic substrates.

Circumboreal, south in North America from Washington to Pennsylvania. Occasional across montane parts of the Intermountain region, mostly within the aspen and coniferous forest zones. July-August.

SIMILAR SPECIES: Inflorescence branches of *J. articulatus* are divergent and its capsules acute. It is generally found at elevations lower than *J. alpinus*.



Juncus articulatus. (A) Inflorescence, (B) capsule and perianth, (C) seeds.

Juncus articulatus L.

Jointed rush

HABIT: Loosely or densely tufted perennial, 15-50 cm tall, arising from stout rhizomes and often rooting from the lower nodes.

LEAVES: 1-3 per stem, basal leaves much reduced; sheath margins scarious, prolonged into rounded auricles; blades terete with complete septa.

INVOLUCRAL BRACT: Much shorter than the inflorescence, 1-3.7 cm long.

INFLORESCENCE: Open; branches divaricate; heads 4-35, small, 2-10 flowered.

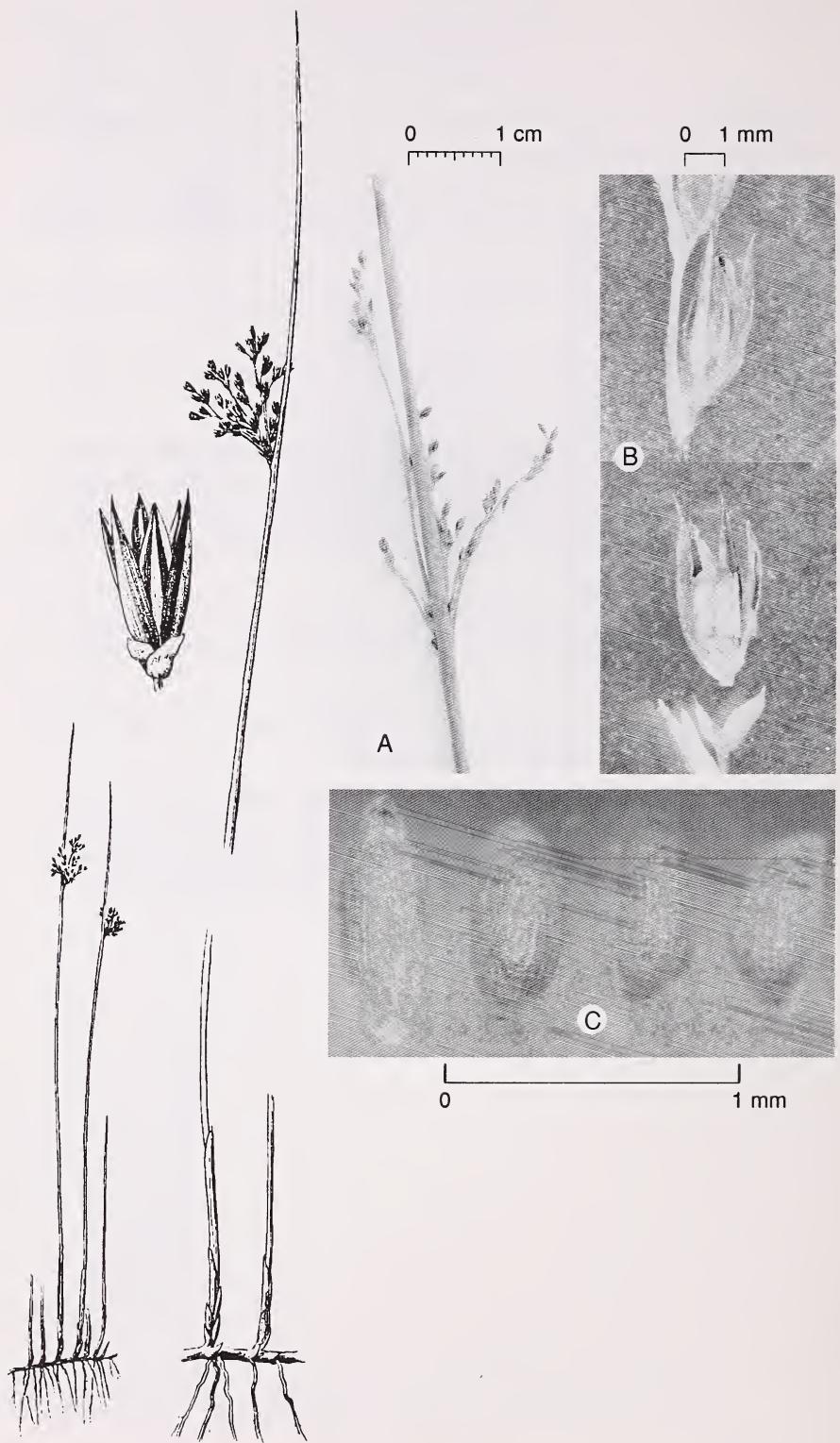
FLOWERS: Sessile, prophylls lacking. **Perianth segments:** Deep (pale) brown or greenish with scarious margins, lanceolate, slightly acuminate, 2.5-3 mm long, about equal or the inner segments slightly longer with wider hyaline margins. **Stamens:** 6; anthers shorter than the filaments.

CAPSULES: Conic-ovoid, somewhat triquetrous, gradually tapering to a stylar beak, unilocular, brown, 2.8-3.8 mm long, exceeding the perianth.

SEEDS: Cylindric-ellipsoid to ovoid, minutely apiculate at both ends, lightly striate longitudinally, 0.5 mm long.

HABITAT AND DISTRIBUTION: Wetlands, meadows, ponds, ditches, roadsides, sandbars, and streambanks at low to moderate elevations below the coniferous forest zone. Circumboreal, south in the United States from Arizona to Minnesota, northern Indiana, and Maryland. June-August.

SIMILAR SPECIES: See *J. alpinus*.



Juncus balticus. (A) Inflorescence, (B) capsule and perianth, (C) seeds.

***Juncus balticus* Willd.**
Baltic rush, wiregrass

HABIT: Perennial, 30-90 cm tall; stems wiry, produced singly, 2 or 3 together, or in dense clumps from coarse, black, creeping rhizomes.

LEAVES: Sheaths clustered at the stem base, light to dark brown, bladeless or nearly so.

INVOLUCRAL BRACT: Terete, sharp-pointed, 4-23 cm long, appearing as a continuation of the stem.

INFLORESCENCE: Compact to loose panicle appearing laterally on the stem; flowers (5)10-50.

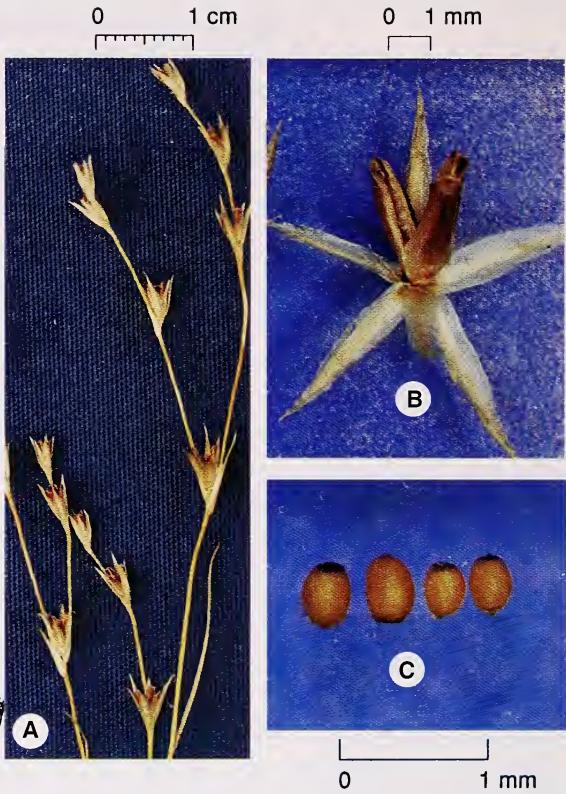
FLOWERS: Pedicellate or sessile; prophylls hyaline scarious. **Perianth segments:** Variously pale to dark, lanceolate, acute to ovate, sometimes hyaline margined, 3.5-5 mm long, subequal. **Stamens:** 6; anthers 3-5 times longer than the filaments.

CAPSULES: Ovoid with an acute to mucronate apex, 3-4 mm long, shorter to longer than the perianth.

SEEDS: Broadly-ovoid to ovoid-ellipsoid, minutely apiculate, finely striate-reticulate, grayish to brown, 0.6 mm long, covered with a mucilaginous sheath when wet.

HABITAT AND DISTRIBUTION: Wet meadows, ponds, lakes, streams, and rivers from valleys to moderate elevations; often in saline or alkaline sites. Interruptedly circumboreal, occurs throughout the Intermountain area from the desert shrub to the aspen and Douglas-fir zones. Also present, but much less common, in the spruce-fir zone. This is the only rush of sufficient community dominance to be recognized as an indicator of a riparian community type in Utah and southeastern Idaho (Padgett and others 1989). May to mid-September.

SIMILAR SPECIES: In the Intermountain area, only *J. balticus* and *J. effusus* exhibit the combination of robust rhizomes and leaves reduced to bladeless sheaths. Stems of *J. effusus* are tufted, arising from short rhizomes, while those of *J. balticus* are usually more dispersed. Anthers of *J. effusus* are equal to or shorter than the filaments. Leaves of *J. filiformis* are also reduced to bladeless sheaths but shorter (5-40 cm tall) than those of *J. balticus*; its stems are generally of smaller diameter and more tufted; rhizome diameter is reduced. (*J. balticus* is also referred to as *J. articus* Willd.)



Juncus bufonius. (A) Inflorescence, (B) capsule and perianth, (C) seeds.

Juncus bufonius L.

Toad rush

HABIT: Small tufted annual, 2-30 cm tall; stems slender, few to many, sometimes branching and often floriferous nearly to the base; roots fibrous.

LEAVES: Few, basal and cauline or all basal, much shorter than the stem; sheath margins membranous with a truncate to rounded apex; blades flat to involute, 1.5 mm wide.

INVOLUCRAL BRACT: Filiform and leaflike or scarious and much reduced.

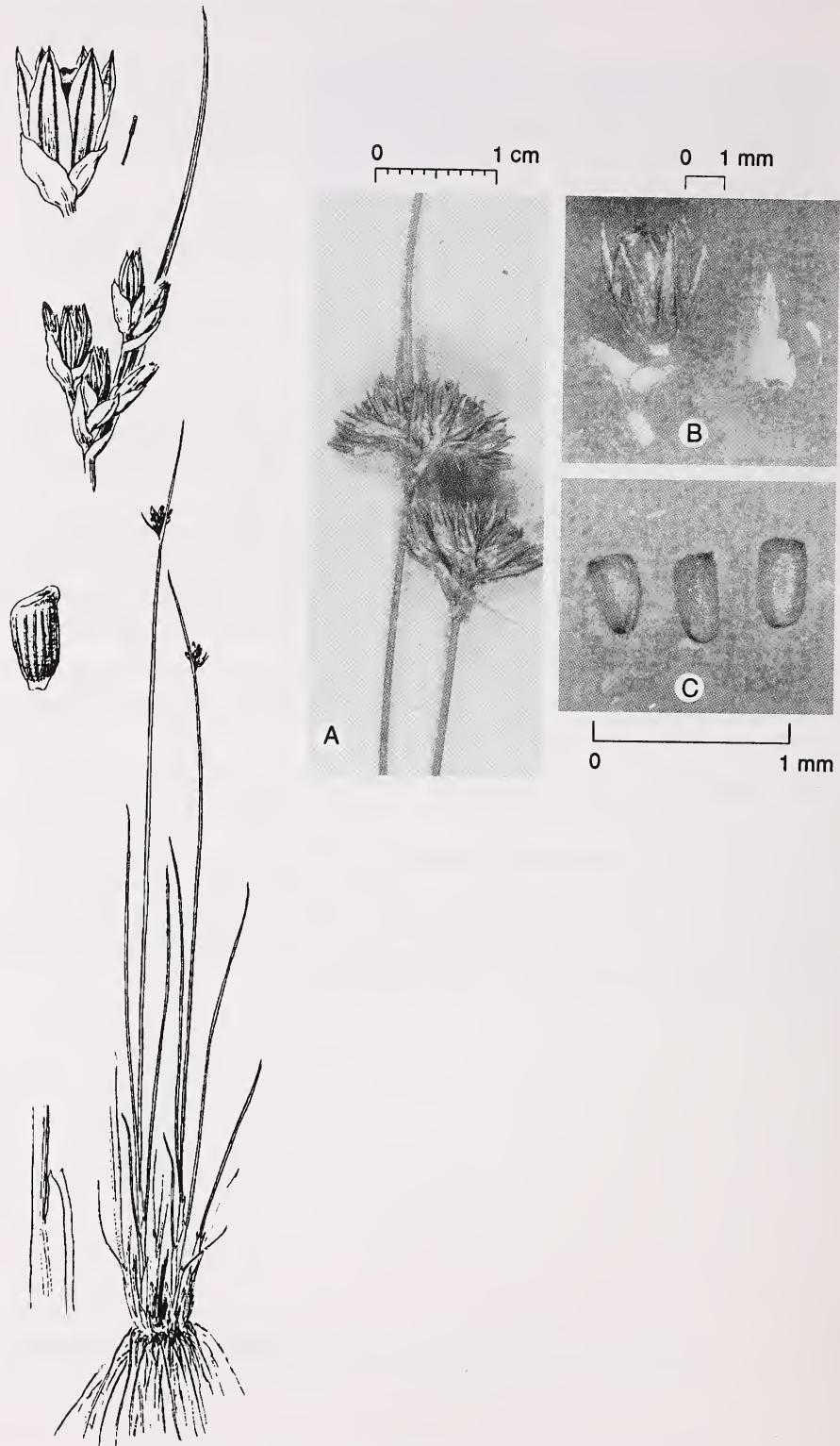
INFLORESCENCE: Panicles 0.6-12 cm long; bractlets of the nodes scarious, often aristate; flowers 1-20, the lower borne singly and sometimes rather remote, those in the upper axils more or less glomerate.

FLOWERS: Short-pedicellate or sessile, subtended by a pair of scarious, usually ovate prophylls. **Perianth segments:** Lanceolate with narrow, membranous margins, acute to acuminate, 3-8 mm long, inner segments equaling or shorter and less pointed than the outer. **Stamens:** Usually 6; anthers shorter than or sometimes equaling the filaments.

CAPSULES: Oblong to subglobose or broadly ovoid with the apex obtuse to mucronate, imperfectly trilocular, greenish to golden brown, 2-4.5 mm long, shorter than the perianth.

SEEDS: Ovoid to ellipsoid, golden brown, apiculate to abruptly truncate and dark brown at each end, minutely reticulate, 0.3-0.5 mm long.

HABITAT AND DISTRIBUTION: Wet meadows, pond and lake margins, streams, and rivers at low to moderate elevations. Cosmopolitan except in the tropics and extreme arctic. Widespread and occasional to common across much of the Intermountain region from the desert shrub to the coniferous forest zone. June-September.



Juncus confusus. (A) Inflorescence, (B) capsule, perianth, and perianth segment, (C) seeds.

Juncus confusus Coville

Colorado rush

HABIT: Sparingly to densely tufted perennial, 8-52 cm tall, developing from fibrous roots; stems slender, terete.

LEAVES: Basal or borne on the lower fourth of the stem, the upper 2-4 with well-developed blades; sheath margins hyaline and projected into rounded auricles; blades channeled or involute, narrow, 0.5-1.3 mm wide, shorter than the stem.

INVOLUCRAL BRACT: Greatly exceeds the inflorescence, slender, 1-13 cm long and less than 1 mm wide with scarious, decurrent auricles.

INFLORESCENCE: Congested, 0.8-2 cm long, straw-colored at maturity; flowers 3-40, borne singly, not in heads.

FLOWERS: Pedicels about 2 mm long; prophylls scarious or hyaline.

Perianth segments: Ascending, elliptic-lanceolate or lanceolate, acute to broadly acute; the inner segments slightly the shorter. **Stamens:** 6; anthers much shorter than the filaments.

CAPSULES: Broadly oblong, completely triquetrous with a retuse apex, trilocular, straw-colored, 3-4 mm long, equaling to slightly shorter than the perianth.

SEEDS: Obliquely ellipsoid-pyriform, shortly apiculate at each end, longitudinally striate, golden brown at maturity, 0.4 mm long.

HABITAT AND DISTRIBUTION: Moist grassy meadows at low elevations; parks, moist woods, and streambanks at moderate elevations. British Columbia to Saskatchewan, south to California, Arizona, and New Mexico. Occasional or locally common throughout much of the Intermountain region, primarily from the pinyon-juniper to the spruce-fir zone. Apparently limited or lacking in the Canyonlands section of Utah and much of Nevada. June-August.

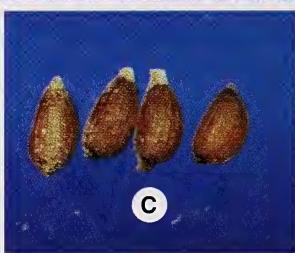
SIMILAR SPECIES: The inflorescence of *J. tenuis* is generally 1-8.5 cm long and its capsule apex obtuse to truncate. It generally occurs at lower elevations in the pinyon-juniper, Wyoming big sagebrush, and desert shrub zones.

**A**

0 1 cm

**A****B**

0 1 mm

**C**

Juncus covillei. (A) Inflorescence, (B) capsule and perianth, (C) seeds.

***Juncus covillei* Piper**
Coville's rush

HABIT: Stems are slightly flattened, 5-25 cm tall, developing singly or few together from creeping rhizomes.

LEAVES: Basal and caudine, but mostly basal; sheath margins narrow, membranous, usually projecting into linear, acute auricles; blades flat, grasslike, 2-3 mm wide, equaling or surpassing the stems.

INVOLUCRAL BRACT: Leaflike, shorter to longer than the inflorescence.

INFLORESCENCE: Panicle with erect branches; peduncles roughened; heads 2-8, mostly 3-7 flowered.

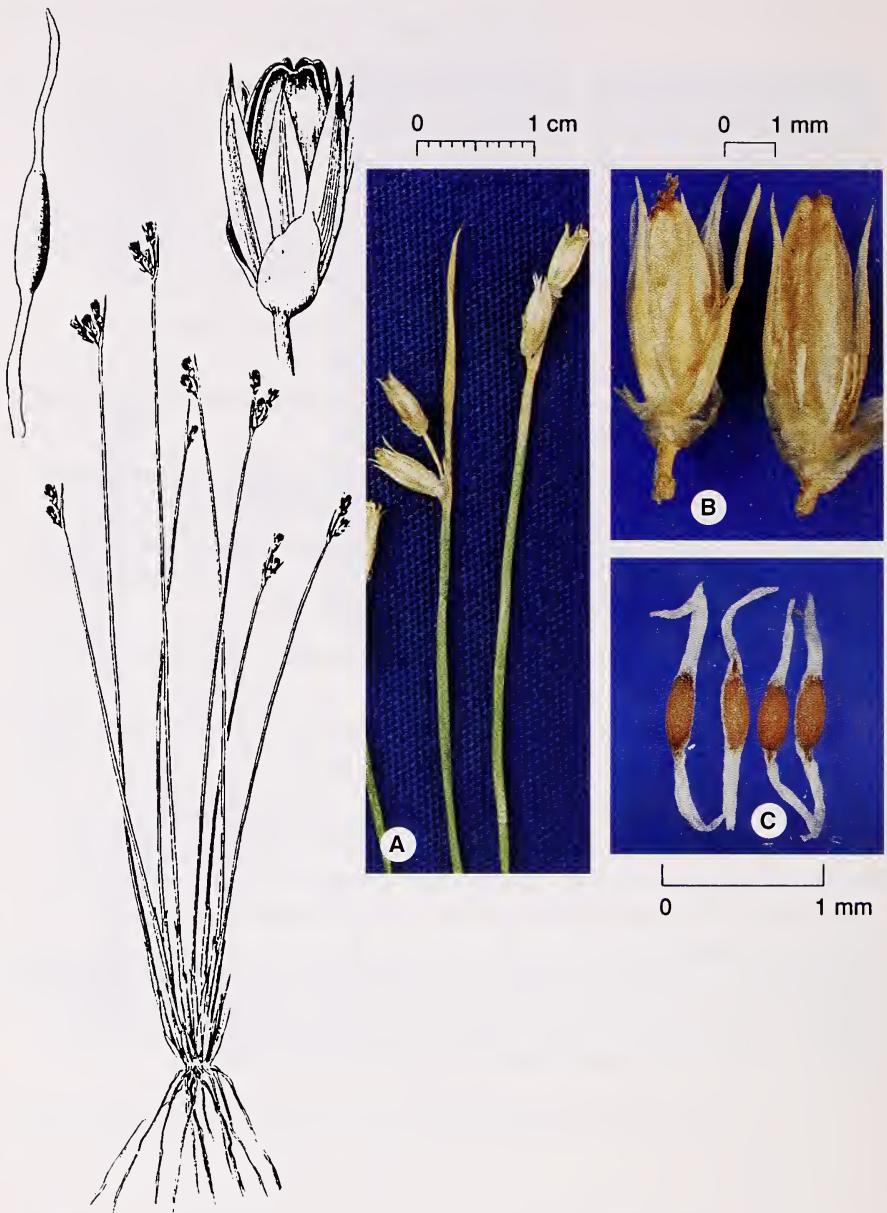
FLOWERS: Prophylls lacking. **Perianth segments:** Ovate-oblong, minutely papillate-roughened with broadly scarious margins, pale to deep brown with a green midstripe, unequal; outer segments rounded to acute and short-mucronate; the inner usually obtuse. **Stamens:** 6; anthers from shorter to longer than the filaments.

CAPSULES: Oblong-ovoid, rounded and usually retuse at the apex, dark brown, longer than the perianth.

SEEDS: Obliquely cylindric-ovoid, semitruncate, but minutely apiculate at each end, faintly reticulate, 0.3 mm long.

HABITAT AND DISTRIBUTION: Wet places, lakes, creeks, and streams. Washington to California, eastward to central Idaho and western Montana. In the Intermountain region, it apparently occurs only north of the Snake River Plains. July-September.

SIMILAR SPECIES: Auricles of *J. longistylis* are truncate or rounded, involucral bracts scarious, and capsules equal to or shorter than the perianth. *Juncus covillei* occurs only north of the Snake River Plains, while *J. longistylis* is distributed throughout the region.



Juncus drummondii. (A) Inflorescence, (B) capsule and perianth, (C) seeds.

***Juncus drummondii* E. Meyer**
Drummond's rush

HABIT: Strongly tufted perennial with numerous wiry, terete stems 8-40 cm tall developing from matted rootstocks or fibrous roots.

LEAVES: Borne on the lower fourth of the stem, bladeless or the blades bristlelike and 2-10 mm long; sheaths of the upper leaves slightly bilobed and scarious at the apex.

INVOLUCRAL BRACT: Terete with scarious, decurrent auricles, sharp-pointed, 1-4 cm long, appearing as a continuation of the stem, shorter to longer than the inflorescence.

INFLORESCENCE: Terminal; flowers 1-3.

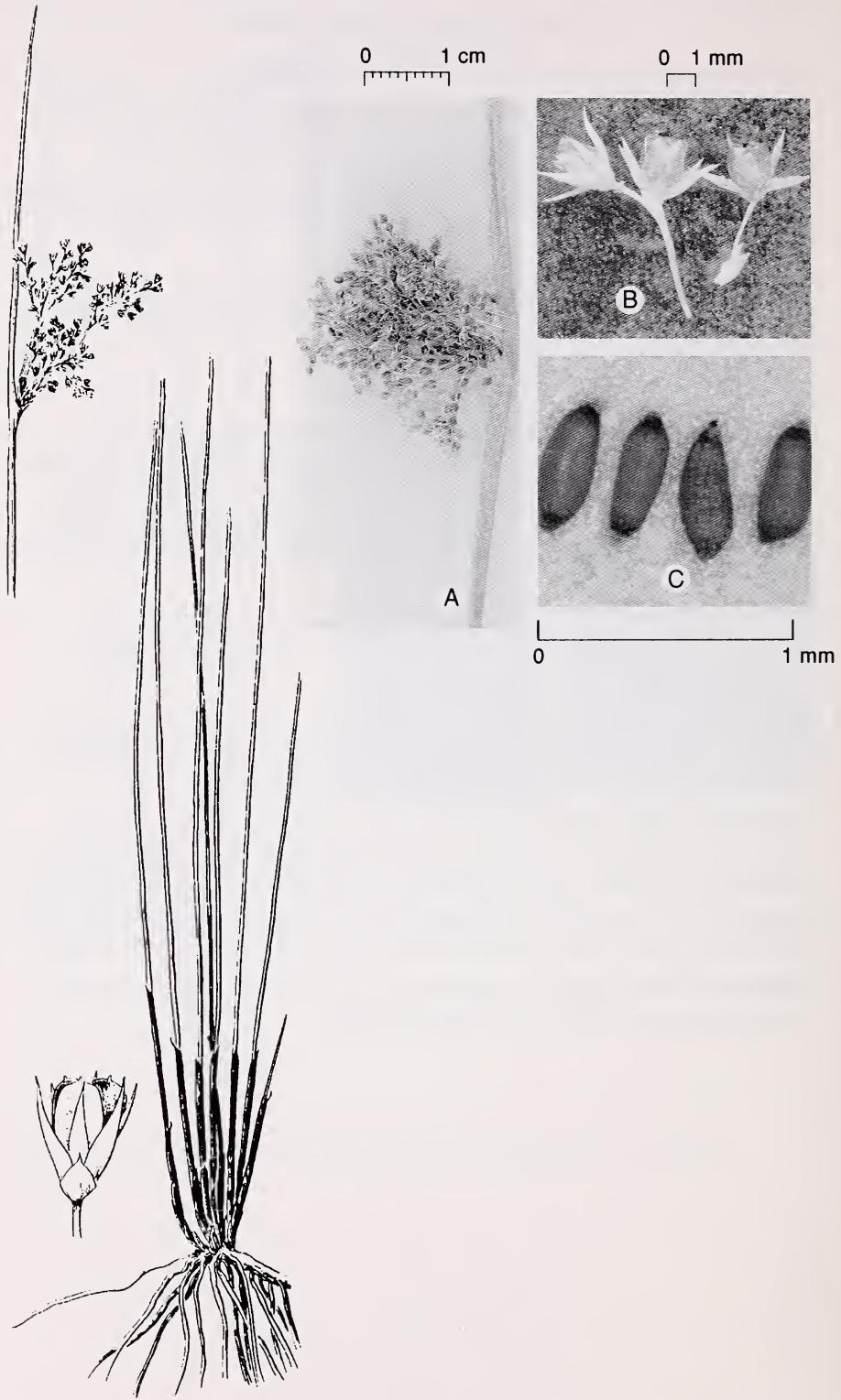
FLOWERS: Subtended by a pair of membranous prophylls with broadly rounded to acute tips, closely aggregated, generally 1 or more sessile or nearly so and 1 or more short pedicellate. **Perianth segments:** Lanceolate-attenuate with scarious margins, subequal. **Stamens:** 6; less than half as long as the perianth; anthers longer than the filaments.

CAPSULES: Oblong, blunt, and more or less retuse at the apex, trilocular, light to medium brown at maturity, 5-7 mm long, about equaling the perianth.

SEEDS: Narrowly ovoid or fusiform, finely striate, medium golden brown; ends long-caudate with the appendages equaling or exceeding the body; length including appendages about 2 mm.

HABITAT AND DISTRIBUTION: Wet and dry meadows, stream-banks, talus slopes, and ridges at high elevations. Alaska to California, eastward to Alberta, western Montana, and New Mexico. Occasional to common in the spruce-fir and alpine zones of higher mountains in Utah and Idaho, apparently limited to Elko County in Nevada. July-August.

SIMILAR SPECIES: The uppermost leaf of *J. parryi* commonly has a well-developed blade; the capsule is acute.



Juncus effusus. (A) Inflorescence, (B) capsule and perianth, (C) seeds.

***Juncus effusus* L.**
Soft rush, common rush

HABIT: Densely tufted perennial arising from short, stout rhizomes; stems terete, 40-120+ cm tall.

LEAVES: Large and rather loose, brown, bladeless, or consisting of basal sheaths with awnlike vestiges of the blade.

INVOLUCRAL BRACT: Terete, 7-20 cm long, appearing as a continuation of the stem, much longer than the inflorescence.

INFLORESCENCE: Flowers aggregated into a compact to loose head, 1-15 cm in diameter, appearing to be lateral on the stem.

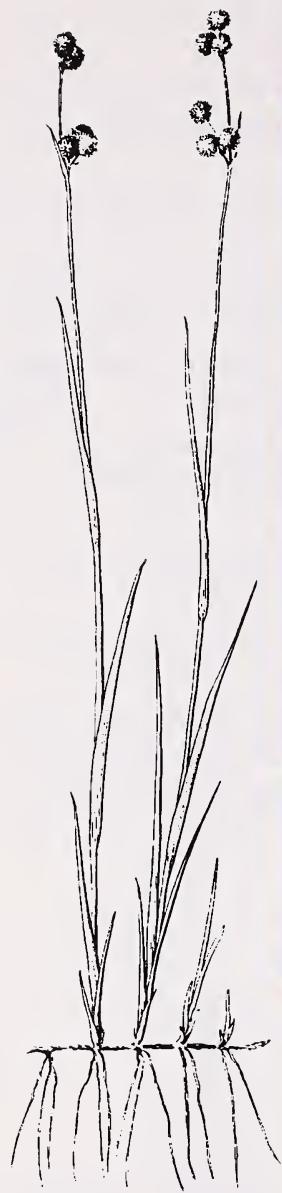
FLOWERS: Prophyllate. **Perianth segments:** Lanceolate, acute, subequal; midrib broad and pale. **Stamens:** 3; anthers equaling or shorter than the filaments.

CAPSULES: Ovoid, thin and soft, apex rounded and slightly retuse, light brown to olive brown, about equaling the perianth.

SEEDS: Broadly ellipsoid, apiculate, finely reticulate, golden brown at maturity, 0.4 mm long, producing a thin layer of mucilage when wet.

HABITAT AND DISTRIBUTION: Moist places, swamps, bogs, ponds, lake shores, and ditches. Sandy to loamy soils. Alaska to Newfoundland and south from Baja California across most of Central and Eastern United States. In the Intermountain region it occurs only north of the Snake River Plains in Idaho. June-August.

SIMILAR SPECIES: See *J. balticus*.



Juncus ensifolius. (A) Inflorescence, (B) capsule and perianth, (C) seeds.

Juncus ensifolius Wikstr.
Swordleaf rush, dagger-leaf rush

HABIT: Perennial, 20-60 dm tall, stems arising singly or few together from creeping rhizomes.

LEAVES: 1-3 per stem; sheath margins rarely prolonged into auricles; blades equitant and ensiform, partially septate, 2-6 mm wide.

INVOLUCRAL BRACT: Ensiform, usually half the length of the inflorescence.

INFLORESCENCE: Panicle, terminating the stem; heads 2-90, loosely clustered, globose, light green to nearly black; flowers 4-25, 5-15 mm in diameter.

FLOWERS: Prophylls lacking; but the sessile flower subtended by hyaline, scarious bracts. **Perianth segments:** Lanceolate-acuminate, pale greenish-brown to deep brownish-purple, 3-3.5 mm long, subequal.

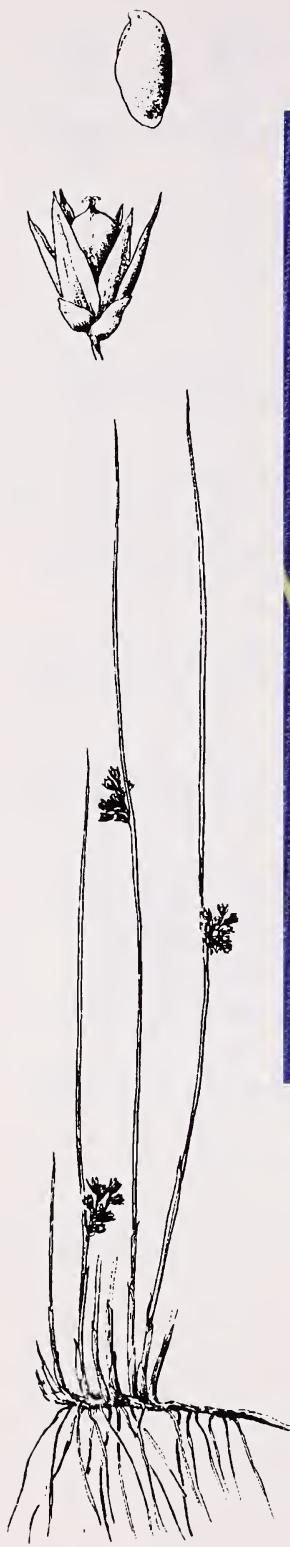
Stamens: 3 or 6; anthers from much shorter to somewhat longer than the filaments.

CAPSULES: Oblong, rounded above, abruptly contracted into a beak, trilocular, dark brown at maturity, from slightly shorter to somewhat longer than the perianth.

SEEDS: Broadly fusiform, minutely apiculate or shortly caudate at each end, finely striate-reticulate, golden brown to dark brown at maturity, 0.4-0.6 mm long.

HABITAT AND DISTRIBUTION: Foothills to moderate elevations, wet meadows, marshes, lakes, seeps, springs, ditches, and sandbars. Alaska to southern California and east to the Rocky Mountains. Occasional to common across much of the region from the pinyon-juniper to the spruce-fir zone, less frequent in the desert shrub zone. June-August.

SIMILAR SPECIES: The ensiform or equitant leaves of *J. ensifolius* are unique among Intermountain rushes.



Juncus filiformis. (A) Inflorescence, (B) capsule and perianth, (C) seeds.

***Juncus filiformis* L.**
Thread rush

HABIT: Perennial; stems terete, filiform, 5-40 cm tall, arising singly or in tufts from creeping rhizomes.

LEAVES: Bladeless, reduced to a tight basal sheath, the uppermost usually with a bristlelike vestige of a blade.

INVOLUCRAL BRACT: Terete, erect, sharp-pointed, appearing as a continuation of the stem and equaling to more than 4 times its length.

INFLORESCENCE: Compact; heads cymose, up to 2 cm in diameter, and seemingly lateral on the stem; flowers 5-20, borne singly.

FLOWERS: Each subtended by a pair of scarious, ovate or oblong prophylls, 3-4 mm long. **Perianth segments:** Lanceolate, acute or acuminate, subequal, mostly slightly exceeding the capsule.

Stamens: 6; about half as long as the perianth; anthers shorter than the filaments.

CAPSULES: Broadly ovoid to obovoid, firm, abruptly tapered to a short stylar beak, trilocular, greenish to golden brown, 2-3 mm long.

SEEDS: Obliquely oblong-ellipsoid, minutely winged-apiculate at both ends, finely reticulate, medium brown, 0.4-0.5 mm long.

HABITAT AND DISTRIBUTION: Wet meadows and marshes at moderate elevations, often on sandy soil. Circumboreal, south in the United States from Oregon to Pennsylvania. In the Intermountain region it occurs in the spruce-fir zone of Utah's Uinta Mountains and in Idaho. July-September.

SIMILAR SPECIES: See *J. balticus*.



Juncus hallii. (A) Inflorescence, (B) capsule and perianth, (C) seeds.

***Juncus hallii* Engelm.**
Hall's rush

HABIT: Densely tufted perennial; stems, slender, terete, 20-40 cm tall; roots fibrous.

LEAVES: Basal and on the lower fifth of the stem; the lowest sheaths brownish, bladeless or with a bristlelike blade; the upper with terete blades, channeled toward the base, 5-15 cm long and less than 1 mm wide.

INVOLUCRAL BRACT: Scarious and caudate to awned or elongate and leaflike with the scarious margins projecting into auricles, scarcely exceeding the inflorescence.

INFLORESCENCE: Closely cymose, congested, 1.7 cm long; flowers 2-7; pedicels 1-8 mm long.

FLOWERS: Subtended by a pair of ovate to orbicular prophylls.

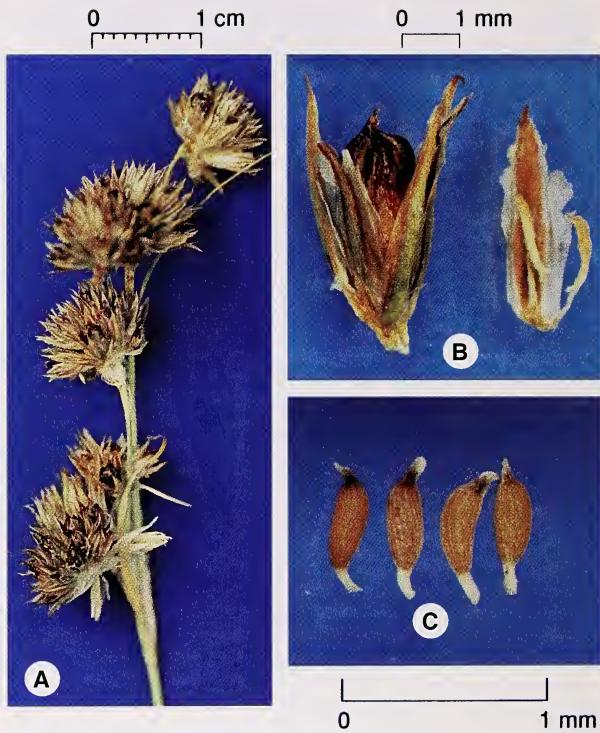
Perianth segments: Lanceolate, acute, usually with greenish centers and purple, hyaline margins, the outer segments slightly longer than the inner. **Stamens:** 6; anthers about equaling the filaments.

CAPSULES: Oblong-ovoid, triquetrous, clearly retuse at the apex, trilocular, dark brown, equaling or slightly exceeding the perianth.

SEEDS: Oblong-linear, finely striate, long-caudate at each end, medium brown, about 1 mm long.

HABITAT AND DISTRIBUTION: Dry to wet boggy meadows, ponds, lakes, streams, and wooded rocky slopes at upper elevations. Southwestern Montana to Colorado. Locally common in meadows in the spruce-fir zone of Utah's Tushar and Aquarius Plateaus and Uinta Mountains. June-August.

SIMILAR SPECIES: *Juncus parryi* resembles *J. hallii* in having few-flowered inflorescences and upper leaves generally with well-developed blades. Capsules of *J. parryi* are acute; seed appendages equal or exceed the body in length. The distribution of *J. hallii* is restricted while *J. parryi* is generally more widespread in mountains of the region.



Juncus howellii. (A) Inflorescence, (B) capsule and perianth, (C) seeds.

***Juncus howellii* F. J. Hermann**
Howell's rush

HABIT: Rhizomatous perennial, 20-60 cm tall; stems slightly compressed.

LEAVES: Basal and caudine; sheaths membranous, margins freed above and forming erect auricles; blades grasslike, dorsiventrally flattened, 2-4 mm wide.

INVOLUCRAL BRACT: Reduced, up to 15 mm long.

INFLORESCENCE: Paniculate, 2-9 cm long; heads 2-9, 7-15 mm in diameter; flowers 3-15.

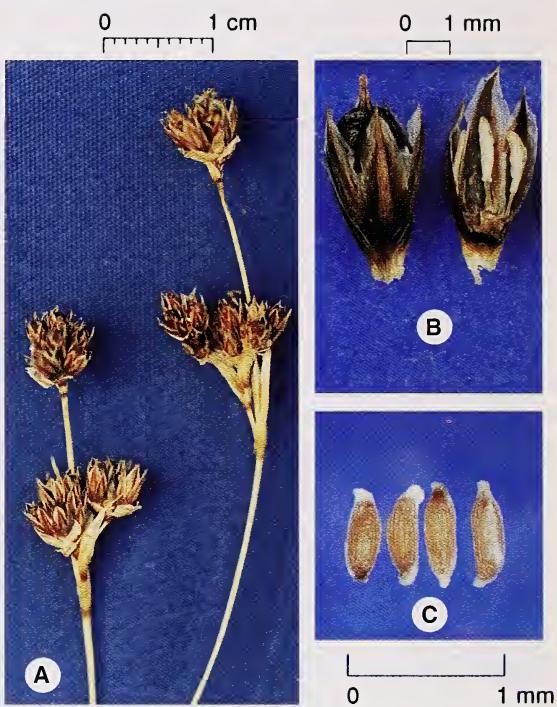
FLOWERS: Prophylls lacking. **Perianth segments:** Lanceolate, acuminate, minutely papillose toward the tip, brown with a broad, greenish midstripe, 5-6.5 mm long, subequal. **Stamens:** 6; anthers longer than the filaments.

CAPSULES: Ovoid, rounded, trilocular, 1-2 mm long, brown, shorter than the perianth.

SEEDS: Ellipsoid-ovoid, gray to brownish, covered with a reticulate membrane that forms an appendage at each end, 1 mm long including appendages.

HABITAT AND DISTRIBUTION: Moist sites in mountains. California, Oregon, and west-central Idaho. July-August.

SIMILAR SPECIES: Perianths of *J. longistylis* have wider, hyaline margins and the seeds are not so elongated, nor are they tailed. Heads of *J. regelii* are usually 1-5; flowers 10-30; seeds are smaller (0.5 mm long) than those of *J. howellii* with appendages equaling or exceeding the body. *Juncus howellii* is known from west-central Idaho while *J. regelii* has a more scattered distribution in the region.



Juncus longistylis. (A) Inflorescence, (B) capsule and perianth, (C) seeds.

Juncus longistylis Torr.

Longstyle rush

HABIT: Perennial; stems arising singly or few together from creeping rhizomes, somewhat compressed, 20-63 cm tall.

LEAVES: Mostly basal, but 1-3 cauline; sheaths with membranous margins projecting into truncate or rounded auricles 1-2 mm long; blades grasslike, dorsiventrally flattened, 1-2 mm wide.

INVOLUCRAL BRACT: Mostly scarious, rarely leaflike, narrowly attenuate to caudate, 1-4 cm long, equaling or shorter than the inflorescence.

INFLORESCENCE: Branches short, sparse; heads (2) 3-5; flowers 3-5, discrete or aggregated.

FLOWERS: Without prophylls; pedicels short, 2 mm long, concealed in the scarious bractlets. **Perianth segments:** Lanceolate, acute to acuminate, brown, 5-6 mm long, subequal; midstripe broad, greenish; margins broad, silvery, membranous, smooth or minutely roughened.

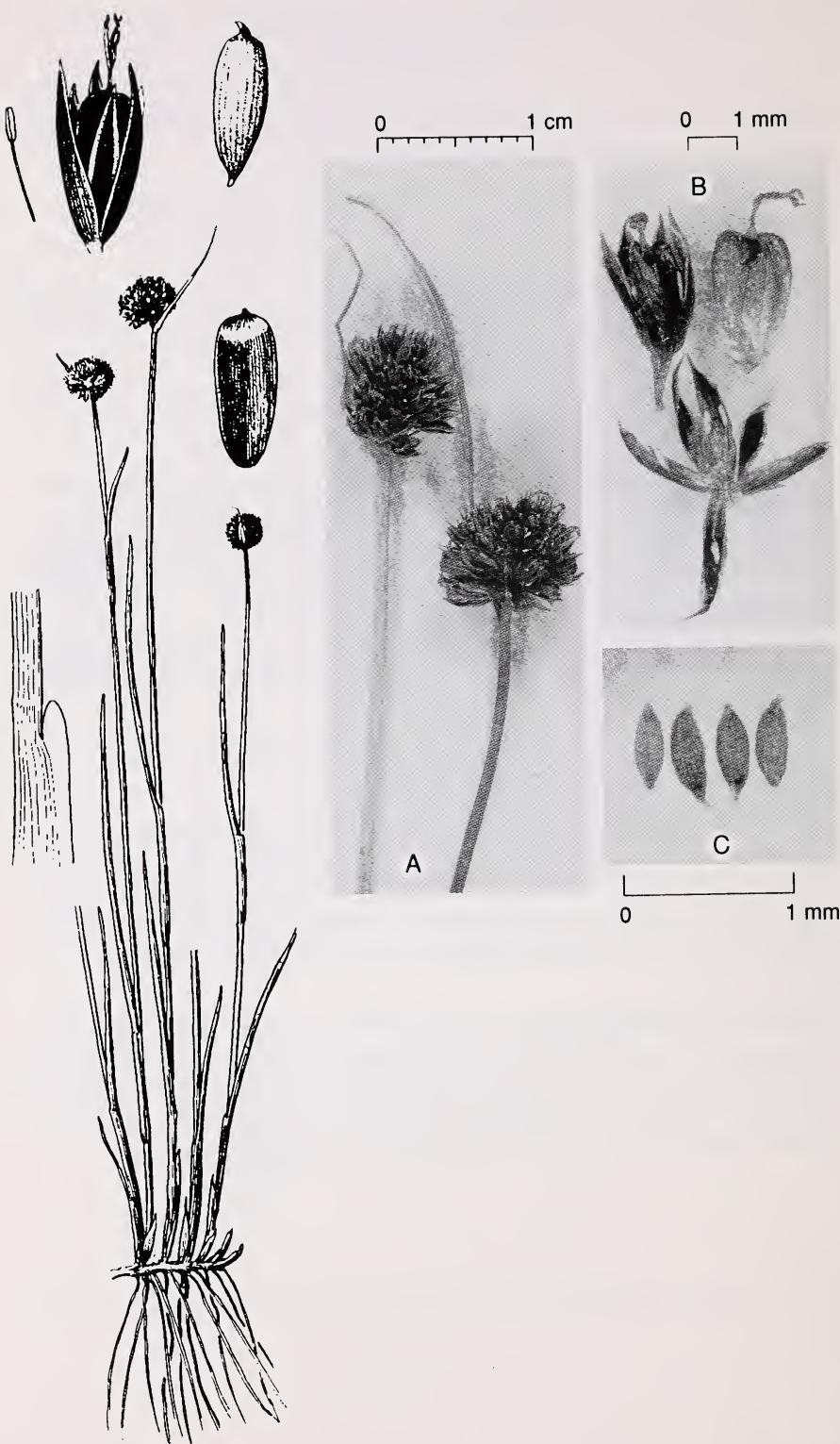
Stamens: 6; anthers much longer than the filaments.

CAPSULES: Cylindric-ovoid, rounded, often retuse, trilocular, stylar beak 1+ mm long, brownish or purplish-black, equal to or shorter than the perianth.

SEEDS: Obliquely cylindric-ellipsoid, slightly apiculate at each end, strongly striate lengthwise, 0.4-0.5 mm long.

HABITAT AND DISTRIBUTION: Wet meadows, seeps, springs, streams, rivers, occasionally in saline places. Montane to submontane. British Columbia to Ontario and south to California, northern Arizona, New Mexico, Colorado, and Nebraska. Occasional to common across much of the region from the desert shrub to the spruce-fir zone. June-August.

SIMILAR SPECIES: See *J. covillei* and *J. howellii*. Hyaline sheath margins of *J. orthophyllus* are sometimes prolonged into inconspicuous auricles less than 0.5 mm long; midstripes of the perianth segments are minutely roughened. The distribution of *J. orthophyllus* is restricted, while *J. longistylis* is more widespread throughout the region.



Juncus mertensianus. (A) Inflorescence, (B) capsule and perianth, (C) seeds.

Juncus mertensianus Bong.
Merten's rush

HABIT: Perennial; stems arising singly or loosely to tightly clustered from creeping rhizomes, terete or slightly compressed, slender and weak, 10-40 cm tall.

LEAVES: Basal and caudine, shorter than the stem; sheaths projecting into rounded, opaque, membranous auricles 0.5-1.0 mm long; blades terete, hollow, channeled above, septate.

INVOLUCRAL BRACT: Bractlike to leaflike, equaling to much exceeding the inflorescence.

INFLORESCENCE: 1 (2) terminal, globose to subglobose head(s) up to 2 cm in diameter; flowers numerous.

FLOWERS: Prophylls lacking. **Perianth segments:** Lanceolate, acuminate, thin and soft, narrow margined, brown to purplish-black, 3-5 mm long, subequal. **Stamens:** 6; anthers shorter than the filaments.

CAPSULES: Oblong-ovoid, abruptly rounded, truncate to more or less retuse at the apex, unilocular, dark brown to purplish-brown, almost equaling the perianth.

SEEDS: Lanceolate-ovoid, minutely apiculate at each end, finely reticulate, dark brown at maturity, scarcely 0.5 mm long.

HABITAT AND DISTRIBUTION: Dry to wet meadows and seeps and margins of lakes and streams. Alaska to Alberta, southward from California to New Mexico from moderate elevations to above timberline. Occurs in higher mountains across much of the Intermountain region from the aspen and Douglas-fir to the alpine zone. July-September.

SIMILAR SPECIES: The species is quite distinct with mostly solitary, blackish heads. *J. nevadensis* heads are (3) 5-30; anthers are up to twice as long as the filaments.



Juncus nevadensis. (A) Inflorescence, (B) capsule and perianth, (C) seeds.

Juncus nevadensis S. Wats.

Nevada rush, Sierra rush

HABIT: Rhizomatous perennial, 10-70 cm tall; stems more or less terete, arising singly or few together from creeping rhizomes.

LEAVES: Basal and caudine; sheath margins scarious, projecting into membranous, ligulelike auricles 1-3 mm long; blades semiterete with complete septa.

INVOLUCRAL BRACT: Bractlike to leaflike, 1-8 cm long.

INFLORESCENCE: Usually well above the blades, 2-8 cm long; branches short, ascending; heads mostly (3) 5-30, discrete to rather aggregated; flowers 3-13.

FLOWERS: Prophylls lacking. **Perianth segments:** Lanceolate-acuminate, segments light brown to dark purplish-brown, 3-5 mm long, the inner segments the shorter. **Stamens:** 6; anthers 1-2 mm long, up to twice as long as the filaments.

CAPSULES: Ovoid-cylindric, triquetrous, rounded or slightly retuse at the apex, the valves not at all emarginate, unilocular, dark brown, equal to or shorter than the perianth.

SEEDS: Ovoid-ellipsoid, minutely apiculate at each end, lightly reticulate, dark brown, 0.5-0.6 mm long.

HABITAT AND DISTRIBUTION: Wet to dry meadows, stockponds, and margins of streams and lakes from lowlands to alpine areas. Southern British Columbia to Montana and south from California to New Mexico. In mountains across much of the region from the Wyoming big sagebrush to the spruce-fir zone. July-September.

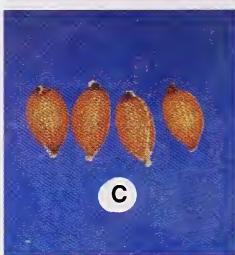
SIMILAR SPECIES: See *J. mertensianus*.



0 1 cm



0 1 mm



Juncus nodosus. (A) Inflorescence, (B) capsule and perianth, (C) seeds.

Juncus nodosus L.

Tuberous rush

HABIT: Perennial, 20-60 cm tall; stems terete, arising singly or in clusters; rhizomes threadlike, creeping, sometimes with small tuberlike segments.

LEAVES: Cauline, equaling or exceeding the stem; sheaths projecting into small, rounded auricles; blades erect, terete or channeled above, hollow, septate, 0.5-1.5 mm wide.

INVOLUCRAL BRACT: Leaflike, exceeding the inflorescence, 2.5-12 cm long.

INFLORESCENCE: Congested to rather open, 1.5-7 cm long; heads 3-12, globose, sessile or pedunculate, 5-12 mm in diameter; flowers 5-25.

FLOWERS: Widely spreading to divergent, prophylls lacking.

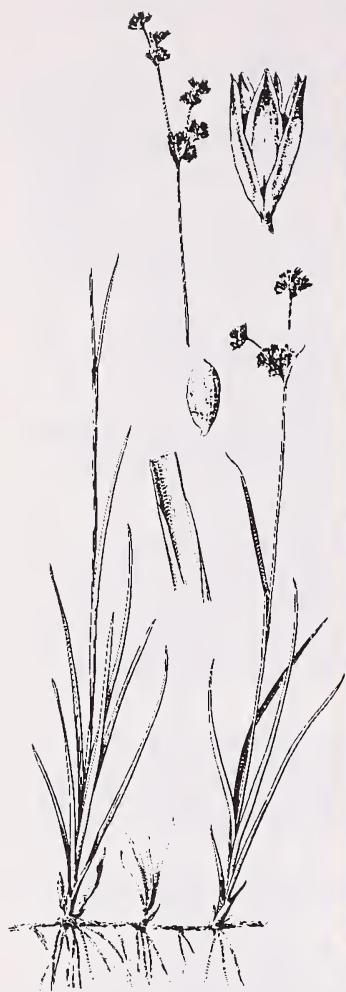
Perianth segments: Narrowly lanceolate and subulate-acuminate, tips not rigid, somewhat shorter than the capsule, 3-4 mm long, the inner segments equaling or slightly exceeding the outer, light to dark brown at maturity. **Stamens:** 6; about half as long as the perianth; anthers slightly shorter than the filaments.

CAPSULES: Prismatic-conic, sharply triangular in cross section, tapering from near the base into a long, nondehiscent stylar beak, medium brown, incompletely trilocular, exceeding the perianth, 4-4.5 mm long.

SEEDS: Oblong to ovoid, finely reticulate, abruptly mucronate, medium brown, 0.4-0.5 mm long.

HABITAT AND DISTRIBUTION: Open wetlands, wet meadows, ponds, and lakes. Alaska to Newfoundland and south from California to Virginia. Occasional or locally common, often in foothills or on toe-slopes of mountains from the desert shrub to the aspen and Douglas-fir zones throughout much of the region. July-September.

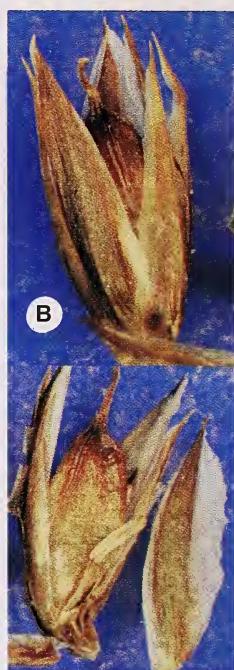
SIMILAR SPECIES: *Juncus torreyi* stems are up to 6 mm thick; auricles of the leaf sheaths 1.5-5 mm long; heads 10-15 mm in diameter; perianth segments mostly 4-5 mm long with rigid tips; capsules about equal to the perianth.



0 1 cm



0 1 mm



0 1 mm

Juncus orthophyllus. (A) Inflorescence, (B) capsule and perianth, (C) seeds.

***Juncus orthophyllus* Coville**
Straight-leaved rush

HABIT: Rhizomatous perennial; stems scattered or somewhat clustered, terete, 15-60 cm tall.

LEAVES: Mainly clustered toward the base, some cauline; sheaths with narrow hyaline margins sometimes prolonged into a pair of inconspicuous auricles, or none; blades flat, grasslike, slightly scaberulous, 2-5 mm wide.

INVOLUCRAL BRACT: Leaflike, shorter than the inflorescence.

INFLORESCENCE: Panicle, exceeds the leaves; heads 2-9, greenish brown, each with several broad, largely pale and hyaline-scarious bracts that subtend some or all of the 3-10 flowers.

FLOWERS: Prophylls lacking. **Perianth segments:** Lanceolate, acuminate (the inner ones may be more abruptly pointed as in *J. regelii*), 4.5-6 mm long, subequal; midstripe green, minutely roughened; margins hyaline-scarious, brown to pale. **Stamens:** 6; anthers longer than the filaments.

CAPSULES: Oblong-ovoid, broadly rounded to slightly retuse, incompletely trilocular, (0.5) 1-2 mm long, brown, shorter than the perianth.

SEEDS: Ellipsoid-ovoid, reticulate; one end shortly apiculate, the other has a truncate tail; total length 0.5-0.6 mm with appendages.

HABITAT AND DISTRIBUTION: Meadows and streambanks from foothills to moderate elevations. Washington to Idaho, south to California. In the Intermountain region it occurs in southwestern Idaho; Humboldt County, Nevada; and the White Mountains of California and Nevada. June-August.

SIMILAR SPECIES: See *J. longistylis*, *J. covellii*, and *J. howellii*. *Juncus regelii* has 1-3 heads, each commonly with 10 or more flowers.



Juncus parryi. (A) Inflorescence, (B) capsule and perianth, (C) seeds.

Juncus parryi Engelm.

Parry's rush

HABIT: Densely tufted perennial from fibrous roots; stems terete, about 1 mm thick, 10-30 cm tall.

LEAVES: Basal and on the lower fifth of the stem; lower sheaths usually tipped with a bristle or much reduced; sheath margins scarious, barely prolonged into auricles; blades of the upper leaves well-developed, terete, channeled to strongly involute below, without septa, shorter than the stem.

INVOLUCRAL BRACT: Leaflike, terete, often auriculate, erect, sharp-pointed, appearing as a continuation of the stem, 2-12 cm long, much longer than the inflorescence.

INFLORESCENCE: Terminal aggregation of 1-4 flowers borne singly, 0.7-2.2 cm long.

FLOWERS: Subtended by a pair of brownish, ovate, scarious prophylls.

Perianth segments: Midstripe greenish with a brownish tinge, margins scarious, 1-8 mm long; the outer segments lanceolate, acuminate; the inner slightly shorter and acute to rounded. **Stamens:** 6; the anthers much longer than the filaments.

CAPSULES: Narrowly oblong, acute, from a little shorter to a little longer than the perianth.

SEEDS: Narrowly oblong, finely striate, body 0.6-0.7 mm long, golden brown at maturity; appendage at each end long, white, about equaling or longer than the seed.

HABITAT AND DISTRIBUTION: Streambanks, dry rocky slopes at upper elevations, alpine and subalpine meadows. British Columbia, south to the Sierra Nevada Mountains in California, and east to the Rocky Mountains from southwestern Alberta and western Montana to Colorado. Occasional or locally common in higher mountains of the Intermountain region from the spruce-fir to the alpine zone. July-August.

SIMILAR SPECIES: See *J. drummondii* and *J. hallii*.



Juncus regelii. (A) Inflorescence, (B) capsule and perianth, (C) seeds.

***Juncus regelii* Buchenau**
Regel's rush

HABIT: Perennial; stems arising singly or few together from creeping rhizomes, terete to somewhat flattened, 10-60 cm tall.

LEAVES: Basal and caudine; sheaths with narrow, membranous margins prolonged into inconspicuous auricles; blades flat and grasslike, 2-4 mm wide, shorter than or equaling the stems.

INVOLUCRAL BRACT: Narrowly pointed, equaling or shorter than the inflorescence, 1-4 cm long.

INFLORESCENCE: Terminal, medium brown at maturity, about 30 cm long; heads 1-5, globose, hemispherical; flowers 10-30, 8-20 mm in diameter, lower heads nearly sessile, the upper pedicelled.

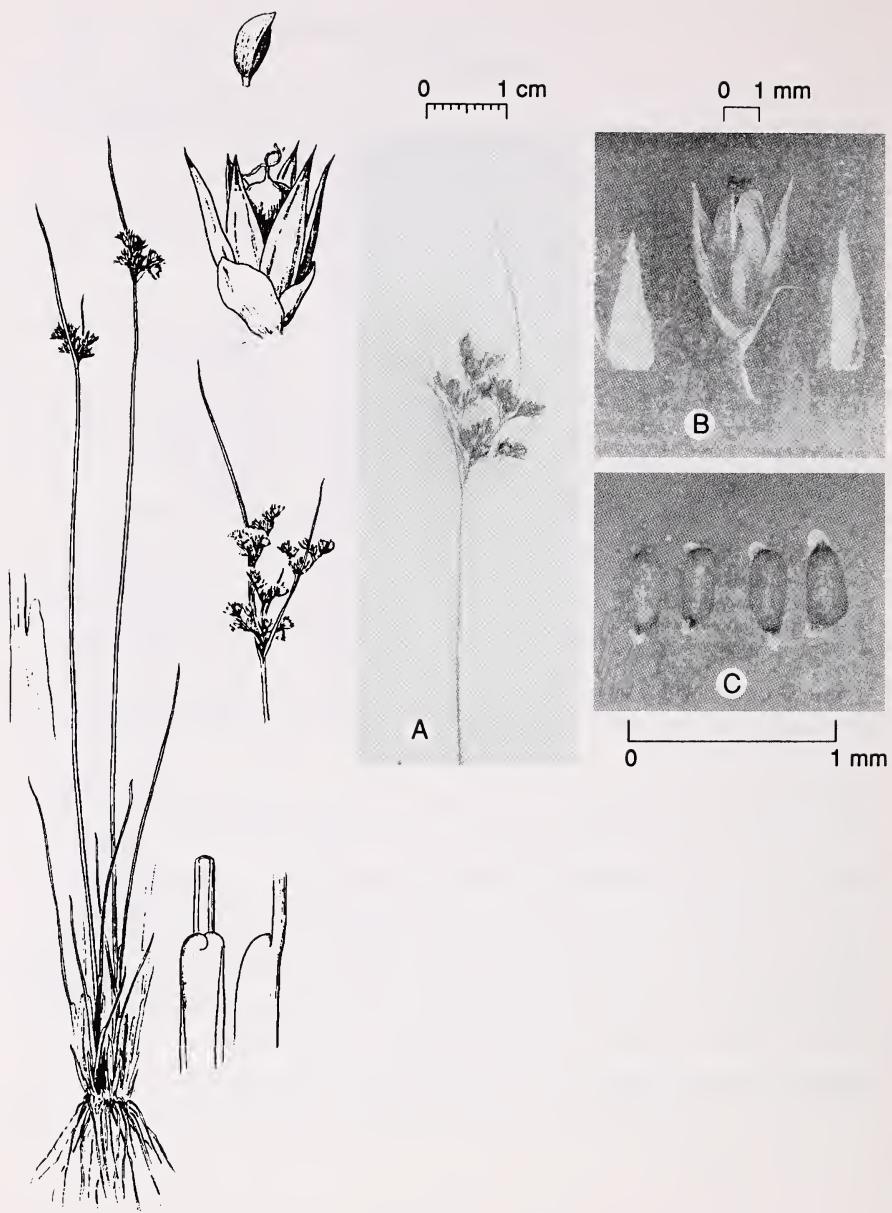
FLOWERS: Prophylls lacking. **Perianth segments:** Broadly lanceolate, papillose-roughened, dark brown with a broad, greenish midstripe, 4-6 mm long; the outer narrower and more acuminate; the inner slightly shorter, broader, with a wider scarious margin, and more blunt. **Stamens:** 6; anthers equaling to longer than the filaments.

CAPSULES: Oblong-ovoid, truncate to retuse, trilocular, medium brown to dark brown at maturity, about equaling or slightly shorter than the perianth.

SEEDS: Narrowly ellipsoid, reticulate, 0.5 mm long, appendaged at both ends, the appendages equaling or exceeding the body.

HABITAT AND DISTRIBUTION: Streambanks, wet meadows, and wet trailsides at middle and upper elevations in the mountains. Southern British Columbia, south to northern California, and east to Montana, Utah, and Wyoming. Infrequent in the Intermountain region where known only from central Idaho, the Uinta and Wasatch Mountains in Utah, and Elko County, Nevada. July-August.

SIMILAR SPECIES: See *J. howellii* and *J. orthophyllus*.



Juncus tenuis. (A) Inflorescence, (B) capsule, perianth, and perianth segments, (C) seeds.

Juncus tenuis Willd.
Poverty rush, path rush, slender rush

HABIT: Tufted perennial with fibrous roots, pale-green to bright-green or drab; stems slender, terete, 50-70 cm tall.

LEAVES: Basal and caudine, borne on the lower fifth of the stem; sheaths prolonged above into elongate-membranous to short cartilaginous auricles; blades flat to involute, 0.5-1.5 mm wide, shorter to longer than the stem.

INVOLUCRAL BRACT: Leaflike, 2-18 cm long, exceeds the inflorescence.

INFLORESCENCE: Cymose, terminal, 1-8.5 mm long, congested to open with unequal, ascending branches; flowers 10-50+, borne singly.

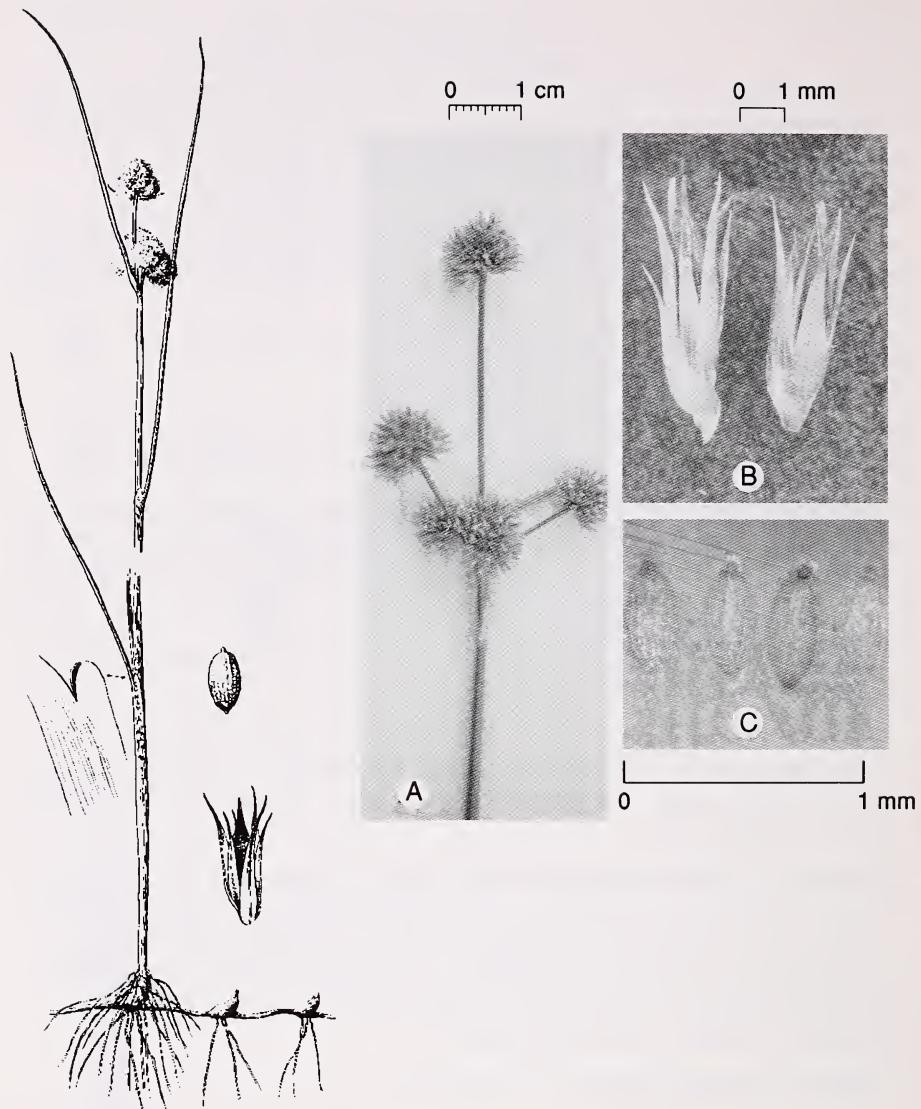
FLOWERS: Prophyllate. **Perianth segments:** Spreading-ascending, acute to acuminate with hyaline margins, green or stramineous with a green midrib, subequal, equaling or exceeding the capsule. **Stamens:** 6; anthers shorter than the filaments.

CAPSULES: Oblong-ovoid to ovoid, obtuse to truncate, usually retuse, unilocular, stramineous.

SEEDS: Obliquely ovoid-ellipsoid, one end somewhat truncate, minutely apiculate at each end, obscurely reticulate, yellowish-brown to golden-brown when mature, 0.3-0.4 mm long, covered with a mucilaginous coat when wet.

HABITAT AND DISTRIBUTION: Seeps, springs, wet to dry meadows, shaded roads, trailsides, and margins of ditches, streams, washes, ponds, and reservoirs. Widespread in North America. In the Intermountain region it occurs primarily in southern Idaho and northeastern and southern Utah from the desert shrub to the lower aspen and Douglas-fir zones. June-September.

SIMILAR SPECIES: See *J. confusus*.



Juncus torreyi. (A) Inflorescence, (B) capsule and perianth, (C) seeds.

Juncus torreyi Coville
Torrey rush

HABIT: Perennial; stems stout, terete, 20-80 (100) cm tall, up to 6 mm thick, arising singly or few together; rhizomes creeping, nodes tuberous.

LEAVES: Cauline, 1-4 per stem, abruptly divergent; sheath margins scarious, projecting into rounded auricles 1.5-5 mm long; blades stout, terete, septate, 2-5 mm wide.

INVOLUCRAL BRACT: Leaflike, equals or exceeds the inflorescence.

INFLORESCENCE: Congested; heads 1-13, more or less globose, sometimes burlike, 10-15 mm in diameter; flowers 10-80, greenish to medium brown.

FLOWERS: Prophylls lacking. **Perianth segments:** Widely spreading and reflexed, narrowly lanceolate and acuminate with rigid tips, greenish to tawny, 4-5 mm long, the outer segments generally somewhat longer than the inner. **Stamens:** 6; about half as long as the perianth; anthers shorter than the filaments.

CAPSULES: Narrowly triquetrous-conic, tapering from near the base into a long, tardily dehiscent beak, incompletely trilocular, usually equaling or slightly exceeding the perianth.

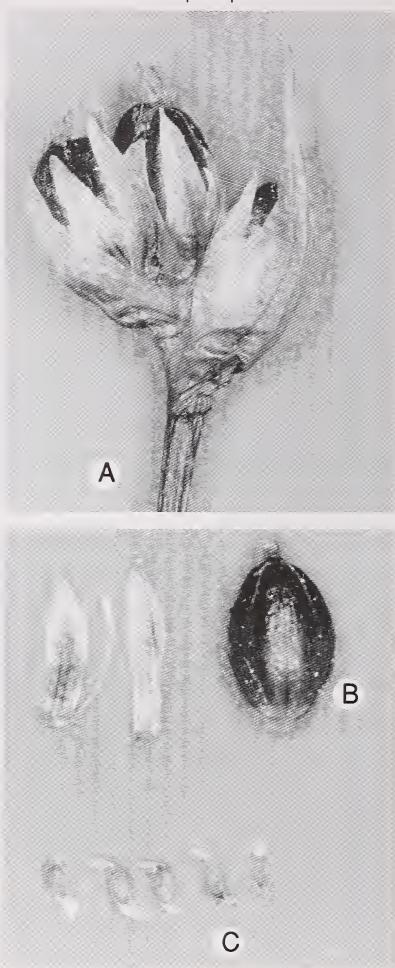
SEEDS: Oblong-ellipsoid, minutely apiculate at each end, finely reticulate, golden brown at maturity, 0.4 mm long.

HABITAT AND DISTRIBUTION: Seeps, springs, ponds, lakes, streams, rivers, and ditchbanks. Tolerates saline and alkaline conditions in wet meadows, marshes, and swamps. Southern Canada to northern Mexico. Occasional to common in desert shrub, Wyoming big sagebrush, and pinyon-juniper zones across the Intermountain region. July-September.

SIMILAR SPECIES: See *J. nodosus*.



0 1 mm



Juncus triglumis. (A) Inflorescence, (B) capsule and perianth segments, (C) seeds.

Juncus triglumis L.
Three-flowered rush

HABIT: Densely tufted perennial developing from fibrous roots; stems terete, filiform, erect, 3-25 cm tall.

LEAVES: Basal or on the lower fourth of the stem; sheaths greenish-brown, auriculate; blades filiform, terete with blunt calloused tips, septate, usually less than half the length of the stem.

INVOLUCRAL BRACKTS: 2, divergent, spathiform, obtuse, brownish to purplish, 5-10 mm long, equaling the inflorescence.

INFLORESCENCE: Terminal, solitary, brown, 5-8 mm long.

FLOWERS: Prophylls lacking. **Perianth segments:** Oblong-lanceolate, obtuse to acute, pale-brown to yellowish-green distally, often marked with purple, 3-5 mm long, subequal. **Stamens:** 6; subequal to or shorter than the perianth; anthers much shorter than the filaments.

CAPSULES: Ovoid, abruptly tapered to a blunt or subtruncate apex, mucronate, 2.5-4 mm long, blackish-purple, shorter than to equaling the perianth.

SEEDS: Oblong-fusiform, trigonous-cylindric, 0.7-1 mm long, golden brown at maturity, papery white-appendaged at both ends, appendages equaling the body.

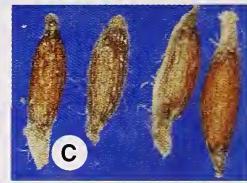
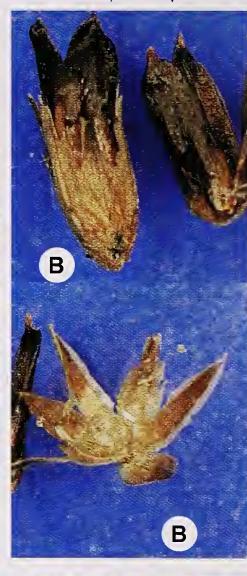
HABITAT AND DISTRIBUTION: Moist, often turf-y or boggy places at high elevations in the mountains, wet meadows. Alaska to Greenland, south from Utah to Montana, Colorado, and Quebec. In Utah, apparently known only from the spruce-fir and alpine zones of the Uinta Mountains. July-August.



0 1 cm



0 1 mm



0 1 mm

Juncus tweedyi. (A) Inflorescence, (B) capsule and perianth, (C) seeds.

Juncus tweedyi Rydb.
Tweedy's rush

HABIT: Tufted perennials developing from fibrous roots; stems terete, 20-35 cm tall.

LEAVES: Basal and caudine; basal leaves reduced to pale, purplish sheaths lacking blades; the upper leaves well developed. Sheaths with membranaceous, truncate auricles; blades terete or nearly so, hollow, septate.

INVOLUCRAL BRACT: Shorter to longer than the inflorescence.

INFLORESCENCE: Contracted to open panicle 1-5 cm long, dark brown at maturity; heads 4-10; flowers 4-8, 3-8 mm in diameter.

FLOWERS: Prophylls lacking. **Perianth segments:** Narrowly lanceolate, acuminate, 3-4 mm long, subequal. **Stamens:** 3; anthers shorter than the filaments.

CAPSULES: Oblong, triquetrous, acute, tipped by a short stylar beak exceeding the perianth, imperfectly trilocular, dark brown.

SEEDS: Cylindric, short apiculate-caudate at each end, finely reticulate, medium to dark brown at maturity, 0.7-1 mm long.

HABITAT AND DISTRIBUTION: Wet places around hot springs, lakes, and river margins. Known from Yellowstone National Park, Wyoming; eastern Idaho; and possibly south-central Montana. Also collected from one location near Corinne, Box Elder County, Utah. July-August.

GLOSSARY

Acuminate—Gradually tapered to a narrow tip.

Acute—Sharp pointed, the tip forming an angle of less than 90 degrees.

Anther—The pollen-bearing portion of the stamen.

Apiculate—Ending abruptly in a small point.

Areole—Diminutive of area; a small, clearly marked area on a surface.

Aristate—With a stiff bristle.

Auricle—A small projecting lobe or appendage.

Blade—The broad, usually flat, part of a leaf.

Bractlet—A small bract.

Bristle—Stiff hair.

Capsule—Dry, many seeded fruit composed of more than one carpel and dehiscing when mature.

Caudate—With a taillike structure.

Cauline—Of or on the stem.

Cymose—Broad flat-topped cluster of flowers with determinate flowering; the terminal or central flowers developing before the outer ones.

Decurrent—Leaf bases that continue downward along the stem as wings or lines.

Dehiscent—Opening at maturity.

Divaricate—Spreading widely from the axis.

Dorsiventrally flattened—Front (ventral) and back (dorsal) surfaces flattened.

Ellipsoid—Elliptic in long section and circular in cross section.

Emarginate—With a broad shallow notch at the tip.

Ensiform—Sword-shaped.

Equitant—Folded lengthwise.

Filament—The stalk of a stamen, supports the anther.

Fistulose—Hollow.

Fusiform—Spindle-shaped.

Glabrous—Smooth, without hairs or glands.

Globose—Spherical, rounded.

Glomerate—In compact clusters.

Head—A rounded or flat-topped cluster of sessile or subsessile flowers or fruits.

Hyaline—Thin and transparent or translucent.

Inflorescence—The flowering area or segment of a plant.

Involucral bract—Bract subtending the entire inflorescence.

Lanceolate—Lance-shaped, narrow and tapering to the apex.

Locule—A seed cavity (chamber or cell) in an ovary or fruit.

Membranous—Thin and flexible like a membrane, more or less translucent.

Midstripe—Central portion of the perianth, from the base to the tip.

Mucilaginous—Composed of mucilage, a gummy substance, slimy or sticky when wet.

Mucronate—Tipped with a short, sharp, slender point.

Nodulose—Diminutive of *nodose* (knobby).

Oblong—With the length roughly 2 to 3 times the breadth, the sides parallel and with equal and more or less obtuse ends.

Obtuse—Blunt, with the sides coming together at an angle greater than 90 degrees.

Obovate—Egg-shaped, broadest at the apex.

Ovoid—Egg-shaped, broadest toward the base.

Paniculate—A branched inflorescence with indeterminate flowering; the apical bud continues to grow for an indefinite period.

Papillose—Covered with short, blunt projections.

Pedicellate—The stalk of a single flower in an inflorescence.

Pedicel—A small stalk, part, or organ, especially one serving as support.

Peduncle—The stalk of an inflorescence or of a solitary flower.

Perianth—A collective term for the sepals and petals of a flower (tepals).

Prophyllate—With a pair of bracteoles at the base of a flower.

Pyriform—Pear-shaped.

Reticulate—Forming a network.

Retuse—With a small terminal notch in a rounded or blunt tip.

Rhizome—A horizontal underground stem.

Scabrous—Rough to the touch.

Scarious—Thin, dry, and chaffy in texture, not green.

Septate—Provided with partitions.

Sessile—Without a stalk, attached directly at the base.

Sheath—A tubular cover that surrounds the stem; the basal portion of the rush, sedge, or grass leaf.

Spathiform—Resembling, or in the form of, a large bract enclosing an inflorescence.

Spike—An inflorescence in which the sessile flowers are arranged along an axis. The basal flowers bloom first; the last one formed is at the apex.

Striate—With fine longitudinal lines or furrows.

Stramineous—Straw-colored.

Style—The slender stalk that typically connects the stigma to the ovary.

Subulate—Awl-shaped; flat, narrow, tapering gradually to a sharp apex.

Terete—Cylindrical, circular in cross section.

Trigonus—Triangular in outline.

Triquetrous—with 3 sharp or projecting angles.

Tufted—Growing in clumps or mats, caespitose.

Turbinate—Top-shaped, that is, more or less an inverted cone.

Valves—The segment of an ovary or capsule wall between 2 lines of dehiscence.

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Hurd, Emerenciana G.; Goodrich, Sherel; Shaw, Nancy L. 1994. Field guide to Intermountain rushes. Gen. Tech. Rep. INT-306. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 56 p.

This guide provides technical descriptions of 23 Intermountain rushes (*Juncus* spp.), including the common and several less abundant species. Line drawings and color or black and white photos illustrate diagnostic characteristics of each species. An illustrated morphology and a glossary acquaint the layperson with terminology used to classify rushes. The guide is intended as a tool to aid in classification; it is not inclusive.

KEYWORDS: *Juncus*, grasslike-species, revegetation, riparian, taxonomy, wetlands



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